Quick Start Guideline

XV-2xx 5.7" Systems

micro innovation
Innovation in Automation

Copyright notice

Intended Use

Hardware, software, operating system and drivers may only be used in the described cases of application and only in connection with the components recommended by Micro Innovation AG and with the original accessory.

Warning !

Defects that occur through inappropriate treatment or usage of the products or components are excluded from the warranty.

No security relevant functions in sense of person or machine protection are allowed to be realized with these components or via communication.

No liability is assumed for damages which result from a failure or malfunction of the components.

All data indicated in this document are not assured characteristics in a legal sense.

Table of Contents

1 GENERAL INFORMATION

This documentation should facilitate the introduction to the handling of the XV200 panel from Micro Innovation. In order to ensure a fast commissioning of the unit it is necessary to follow the explanations and references carefully.

The commissioning of the unit, communication, PC program usage and project generation with GALILEO and MXpro will be described step by step.

For the description in this documentation the following versions of GALILEO and MXpro were used:
- GALILEO V5.3.0
- MXpro V2.3.3 SP1

The illustrated pictures and described functions can differ if newer or different versions of the programs are used.

Furthermore for the display of printscreens a monochrom unit was used.

For the color variant no changes in functionality apply.

1.1 DOCUMENT INDEX

	Topic	Document	Docu-Number
[1]	Hardware manual	Hardware description XV200 5.7" system	M001045
[2]	Installation	Installation manual and general wiring reference	M000193
[3]	Network	Networking	M000191
[4]	Windows CE	MICRO PANEL with Windows CE It is also part of the GALILEO help	M000173

(The index is not exclusive)

On this website you can find theses helpful documentations http://support.microinnovation.com

2   HARDWARE STRUCTURE

2.1   EQUIPMENT VARIANTS

The XV200 5.7" system is available in the following types:

| Type	Interface variant
MK2-232-57BAS-x-1x	system port, not galvanically separated RS232
MK2-230-57MPN-x-1x	MPI, not galvanically separated
MK2-230-57CNN-x-1x	CAN, not galvanically separated
XV-252-57MPN-x-1x	MPI, not galvanically separated
XV-252-57CNN-x-1x	CAN, not galvanically separated

2.2   SCOPE OF SUPPLY XV200

Standard scope of supply:

1   enclosure MICRO PANEL XV200 5.7"
1   Micro Panel XV200:
 - XV2-232-57BAS-x-xx (with RS232-interface),
 - XV2-230-57CNN-x-xx (with CAN-interface) or
 - XV2-230-57MPN-x-xx (with MPI-interface)
8   fixing clips (for equipment installation)
8   grub screws (for equipment installation)
1   seal cord (for equipment installation)
1   power supply plug
1   resistive touch pen

2.3 OVERVIEW OF CONNECTIONS
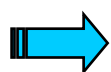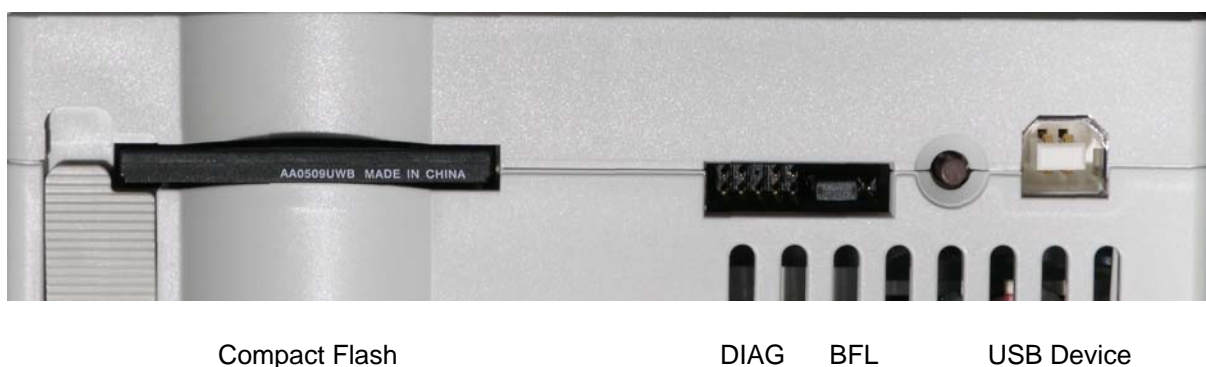
Connection blind XV-230-57xxx

| Ethernet | Field bus (option MPI) | Supply |
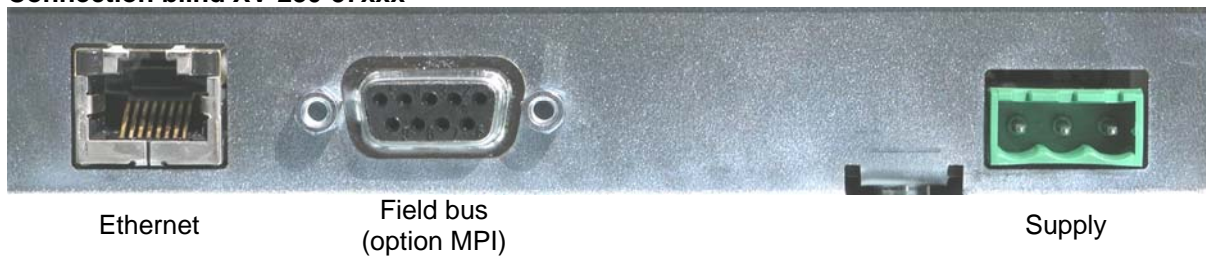
Connection blind XV-232-57BAS

| Ethernet | System port (RS232) | Supply |

Connection blind XV-252-57XXX-1-X

Service side

Compact Flash   DIAG   BFL   USB Device

The ports DIAG and BFL are exclusively for service usage

The ports Ethernet, field bus or (system port) and power supply are found seen from the back to the right of the unit.

The port for the USB-interface is found on the left side of the unit.

2.3.1 COMPACT FLASH

The CF-card (OS-flash) includes the operating system for the unit and is mandatory for operation. The OS-flash may only be inserted when the power is off.

| ⚠	**For tue guarantee of a troublefree operation we recommend the use of the CF-cards offered by Micro innovation. When using CF-cards of other suppliers Micro innovation delines any support as well as responceablity for any consequential damages.**

| ⚠	**Data loss.** **If a CF-card is removed during operation of the unit a data loss or coruption can occur.** - **only incert or remove CF-cards in power off status.** - **secure the CF-card with the slot interlock.** - **writing to the CF-card should be avoided. With simultaneous voltage drop this can lead to data loss.**

2.3.2 CONNECTION POWER SUPPLY
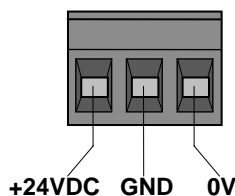
Connection plug: Phoenix Contact MSTB 2.5/3-ST-5.08
Phoenix Contact Art.Nr 1757022;
It is included in the delivery
(Perspective from the wiring view)

+24VDC   GND   0V

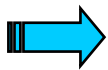| +24 VDC	Power supply +24VDC
GND	Ground, connect the plug blind (does not need to be connected)
0 V	Power supply 0V (potential free)

3 COMMISSIONING OF THE UNIT

3.1 APPLY THE WINDOWS LICENSE STICKER
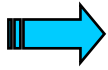
For legal reasons you are obligates to attach the provided license sticker to the panel. Proceed as described in the Windows license paper.

.

➔

3.2 GENERAL REMARKS TO WIRING

To guarantee a troublefree operation special care with the wiring is necessary. The values concerning EMP as specified in the technical data can be kept only if the appropriate references and wiring are obeyed. The wiring must be layed separately to power cables or be separated by double or intensified isolation.

➔ Further information: Hardware manual XV200 5.7" system ([1] see chapter 1.1)

3.3 POWER UP OF THE UNIT

1   Put the in the delivery included OS-flash (enclosed CF-card of the unit) in the CF slot:

Data loss.

If a CF-card is removed during operation of the unit a data loss or coruption can occur.

- **only incert or remove CF-cards in power off status.**
- **secure the CF-card with the slot interlock.**
- **writing to the CF-card should be avoided. With simultaneous voltage drop this can lead to data loss.**
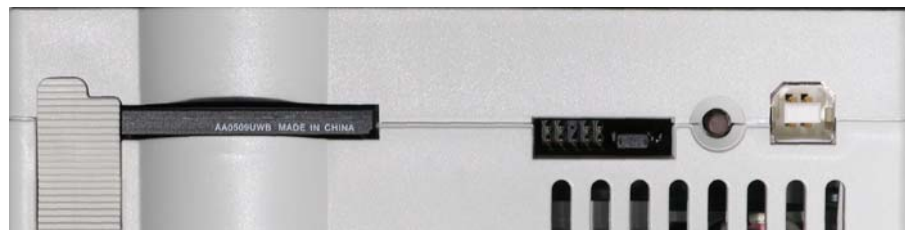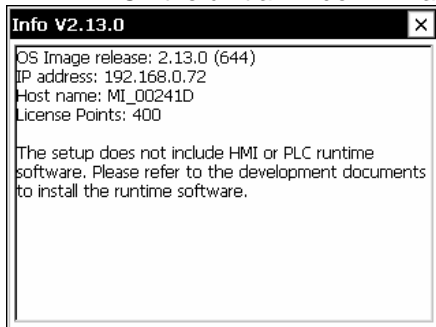

Service front of the unit (left: CF-Slot-interlock open, right: closed)

  1.1   Open the CF-slot interlock.
  1.2   Place the CF-card in the Compact Flash-slot.
  1.3   Close the CF-slot interlock.

2   Connect the power supply to the unit (properties of the power supply cable, see chapter „2.3.2 Connection Power Suppl"):

Subject to technical changes

- The unit will boot.
- On the unit a window will appear.

```
Info V2.13.0                              [×]
OS Image release: 2.13.0 (644)
IP address: 192.168.0.72
Host name: MI_00241D
License Points: 400

The setup does not include HMI or PLC runtime
software. Please refer to the development documents
to install the runtime software.
```

3 If the information window does not appear and instead the text „No card in CF-Slot 0 detected" is displayed then:

3.1 Turn off the power.

3.2 Check the CF-card if it placed in correctly.

3.3 Turn on the power again.

4 Close the information window that appears on the unit after booting.

3.4 ETHERNET

The Ethernet interface of the unit is used for engineering the visualization "GALILEO" as also programming the PLC with "MXpro". To commission the communication between the unit and the PC follow the next described steps.

An IP-Address always consists out of a network and computer address. The network mask specifies which bits belong to the network and which do not.
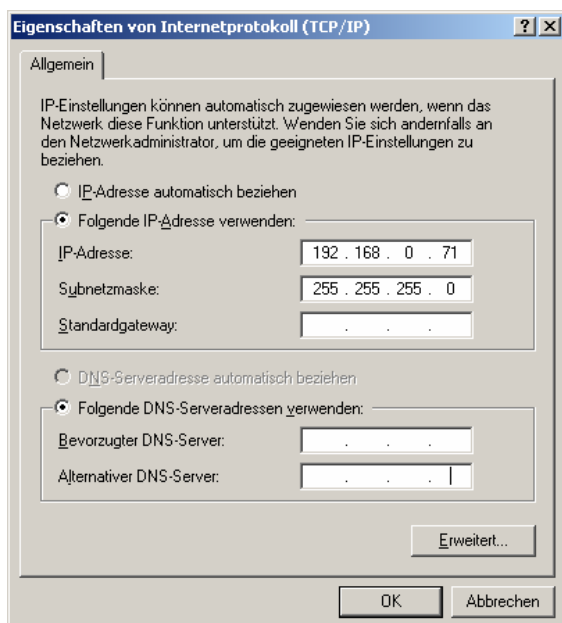
Select for the unit a free computer address from the local network. You can determine the network address of your PC under start → setting → network and telecommunications connections → properties → characteristics. Select out of the list Internet protocol (TCP/IP) and press the button properties.

Setting of the network card of the PC

Example:

> **IP-Address PC:**
> IP-Address   : 192.168.0.71
> SubNetMask   : 255.255.255.0
>
> This means:
> Network-Address   :   192.168.0
> Computer-Address   :   71
>
> **Select an IP-Adresse for the unit:**
> Network-Address   : 192.168.0
> Computer-Address   : 72 (Number between 1-254 and not any already used in the local network)
>
> **→ IP-Address unit:**
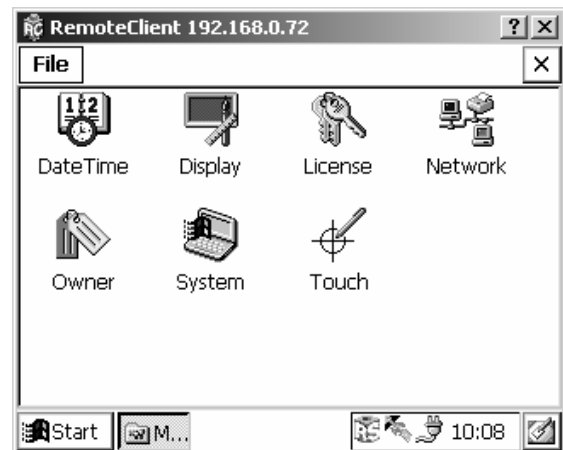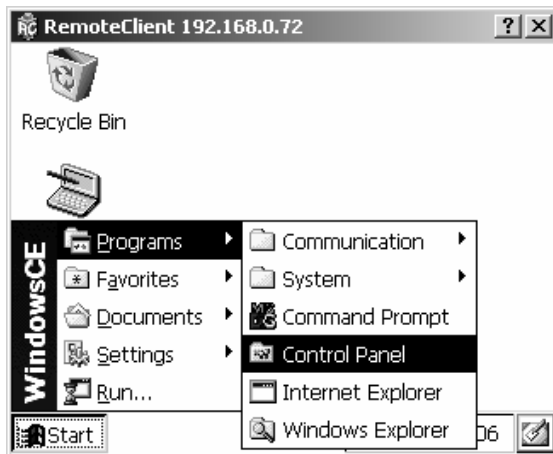> IP-Address   : 192.168.0.72
> SubNetMask   : 255.255.255.0

Attention
The usage of the same address twice can cause critical network problems!

**3.4.1** EXAMINING AND ADJUSTING OF THE IP-ADDRESS OF THE UNIT

Power up the unit. If an information window appears after booting please close it.

After Windows CE has booted from the OS-flash press the S*tart* button and change to the menu *Programs* → *Control Panel.* Open the icon *Network* with a double click.
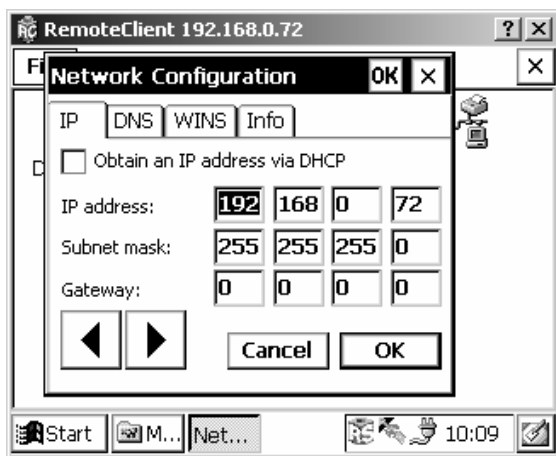
A window *Network Configuration* will open. Select the desired IP address and subnet mask. Use the gateway only when needed then push *OK.*
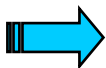
The IP address and subnet mask must be consistant to the network configuration of the PC respectively the company network. In doubt ask your network administrator.

A window will then open with the question *„Do you want to restart now?"* Acknowledge this with *"yes".*
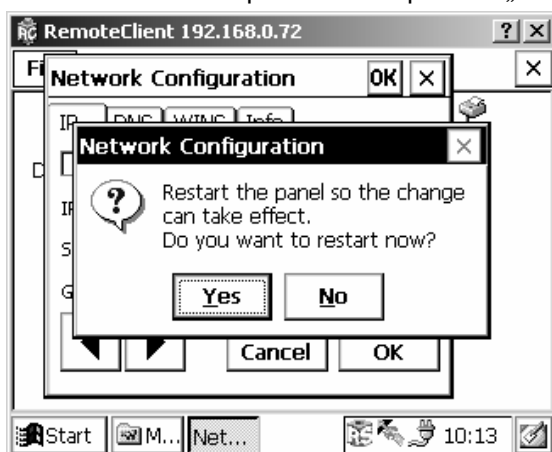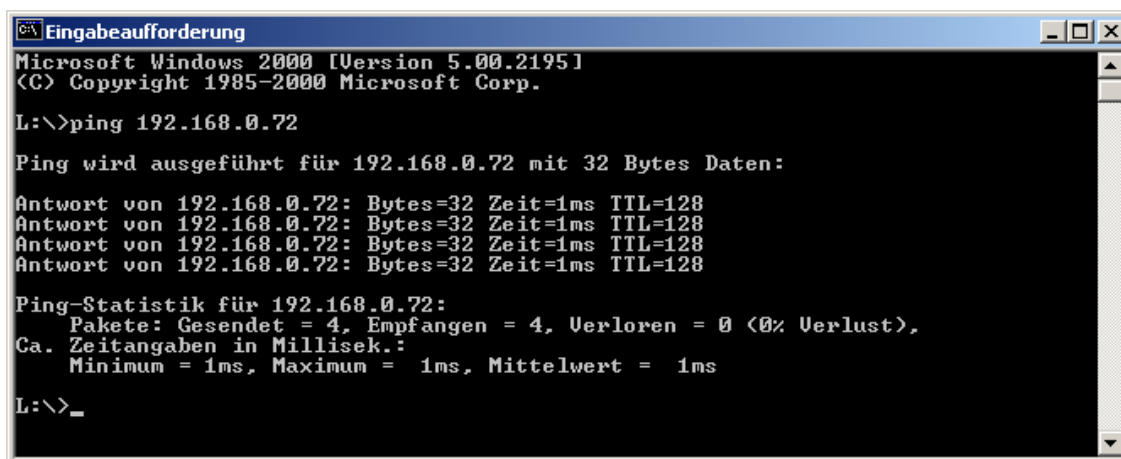

The panel will now restart the system with the new IP address.

3.4.2 WIRING

Connect the unit directly to the PC with an ethernet crossover cable. If you use an ethernet hub or switch us a 1-to-1 patch cable.

3.4.3 TEST THE ETHERNET CONNECTION

To test the connection open the "Dos-Shell" on your PC over *Start*
→ *Programs* → *Accessories* and ping the IP address of the unit.

Test the connection to the unit with "Ping"

If the unit does not answer then contact your network administrator.

→ Further information: Hardware manual XV200 5.7" system ([1] see chapter 1.1)
→ Further information: MICRO PANEL with Windows CE ([4] see chapter 1.1)

4   THE FIRST PLC PROGRAM

If you would like to use the unit without the internal PLC functionality then please jump over this chapter and continue with chapter 5 "The First GALILEO project"

This chapter consists of a basic application which shows the programming with MXpro and the special communication between PLC and HMI in a MICRO PANEL XV200.

4.1   INSTALLATION OF THE PLC RUNTIME LICENSE POINTS

The PLC runtime additionally needs license points on the unit.

Here you have acquired a license paper. Over the website :

www.microinnovation.com/license

an activation code will be generated after you have entered you license code and serial number of panel.

Follow the steps as given in the internet.

The activation code has to be entered in the license menu of the panel (START -> PROGRAMS -> CONTROL PANEL -> LICENSE).

After that the license point of the device will be increased.
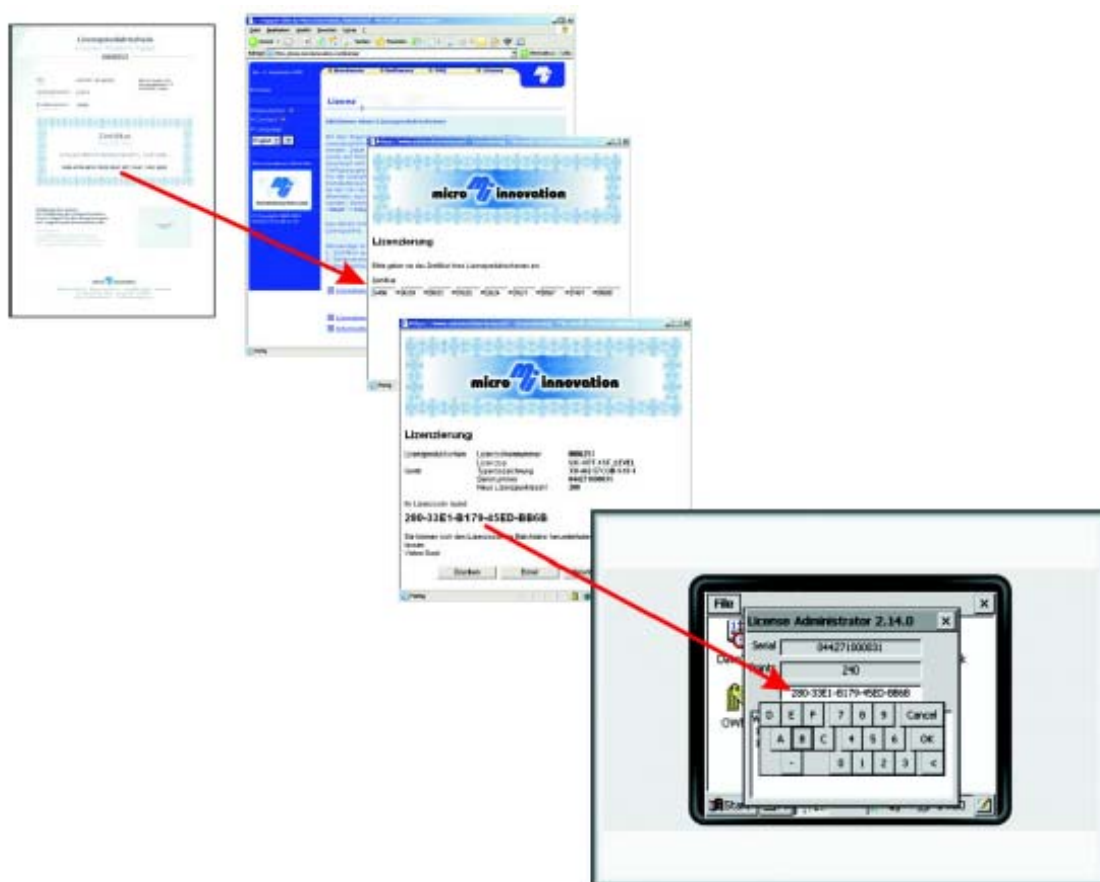
4.2   INSTALLATION OF THE PLC RUNTIME SYSTEM ON THE UNIT

Requirement:
Die MXpro Software (CoDeSys) must be installed correctly on the PC.

The OS-flash included in the unit does not have the PLC runtime installed. The PLC runtime can be installed on the OS-flash with the tool „SetupTargetFirmware".
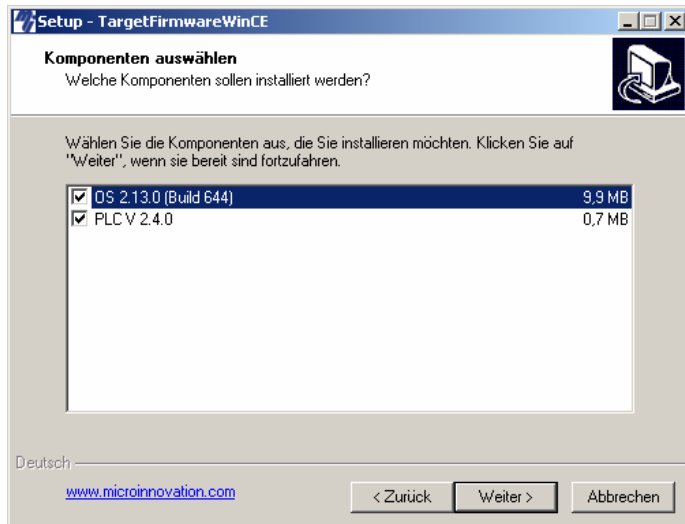
Procedure:
Start the tool „SetupTargetFirmware" on your PC through clicking Start→Programs→Micro Innovation→MXpro V2.3.3 SP1→TargetFirmware→TargetFirmwareWinCE_V2.40.exe

After starting the setup the follow the dialog until the following window appears.
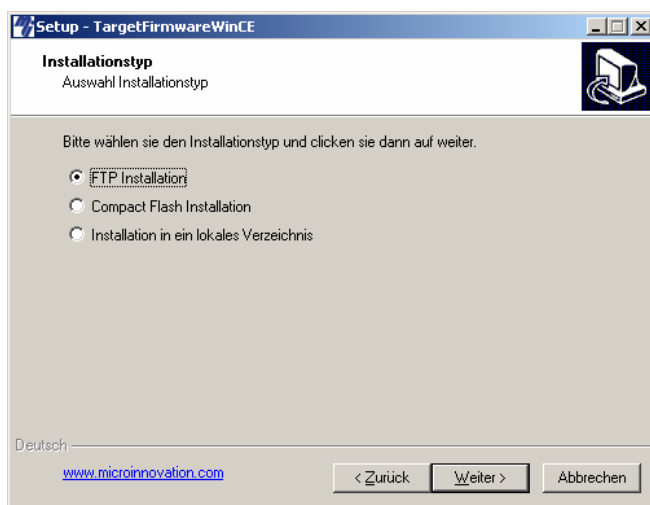
Select the desired installation type and execute the next steps:

- **FTP Installation (suggested routine**: The installation of the PLC runtime is done over FTP.
  Required step:
  - Ensure that the unit is connected to your PC over ethernet.
  - Start the unit.
  - Start the FTP-server on the unit over clicking *Start → Programs → Communications → FTP Server*.
 - Follow the setup on the PC further unit the following dialog window appears.

- Select „OS 2…" and click on the button "further >".
- Enter the IP-address of the unit.
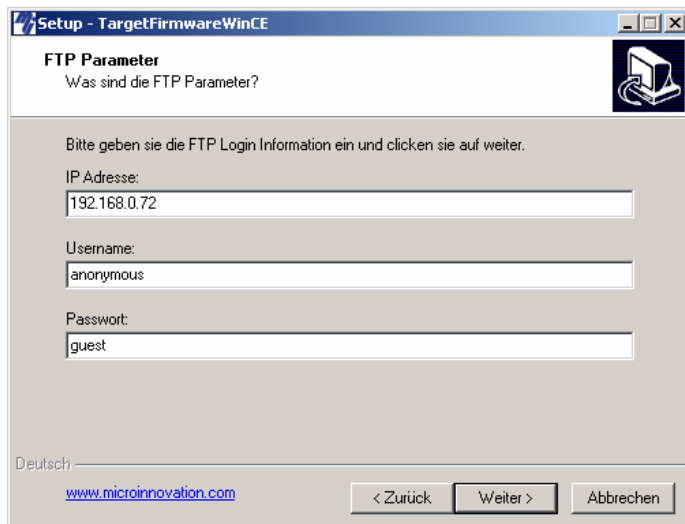
- Continue the setup procedure.
- After finishing the installation restart the unit to start the PLC runtime.

- **Compact Flash Installation**: The installation of the PLC runtime applies directly to the OS-flash. (Supplied CF-card of the unit).

Required steps:
- Insert the OS-flash in into the card adapter of your PC.
- Continue the setup routine on your PC until the following dialog appears.
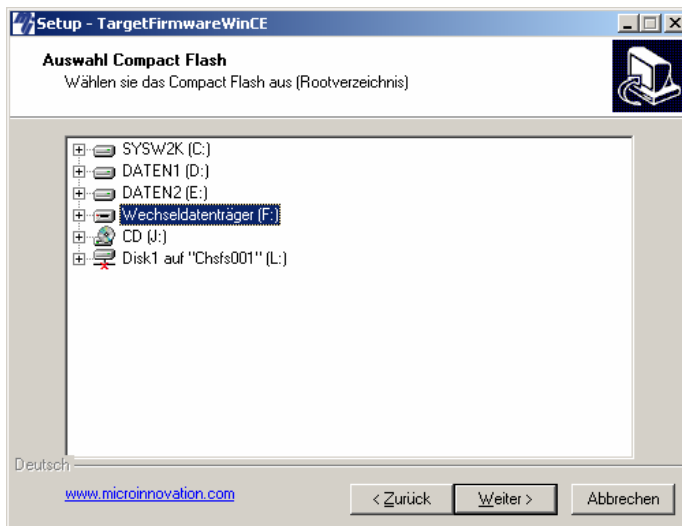
- Select the compact flash root in the directory through selecting the disk (disk character).
- Continue with the setup.
- After completing the installation put the OS-flash back in the unit. (The unit has to have power off).
- Start the unit new to start the PLC-runtime.

- **Installation to a local directory**: all files of the PLC runtime will be installed to a local directory on your PC.

  Required steps:
  - Fully complete setup.
  - Copy the whole contents of the directory "XV200" (you can find it in the newly created directory on you PC) manually in the main directory on the OS-flash (supplied CF-card of the unit).
  - Start the unit new to start the PLC-runtime.

After successfully installation of the PLC runtime and reboot of the unit a status display for the PLC runtime will appear (after clicking "PL…" in the program menu).
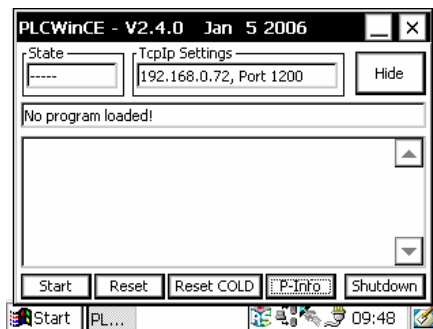
If a visualization is already installed and running the on unit and covering the status display you can stop the visualization with help of the button (next to the USB-device port).

4.3 PROGRAMMING THE PLC–PROGRAMS WITH MXPRO

Requirements:
The MXpro software (CoDeSys) must be installed correctly on your PC and started. On the unit the PLC runtime must be installed correctly.
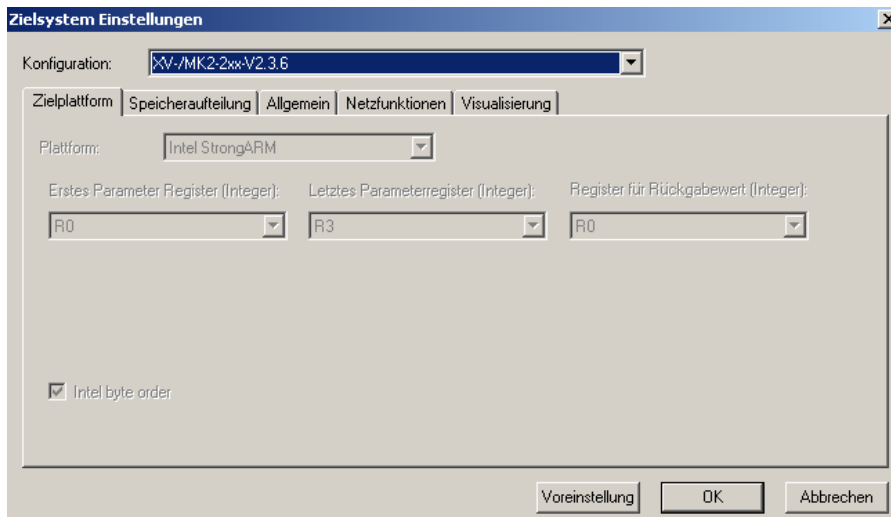
Over →File→New you can start a new project

Before you can start programming you have to select the unit type in the Dialog window "Target Setting".
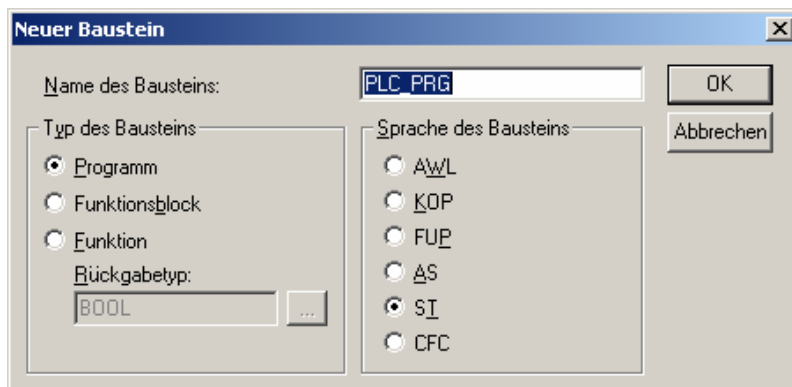

Target Settings

Please select the target „XV2-200-Vx.x.x".

In the dialog window that appears acknowledge with "OK".

In the following dialog window you can now generate a programming unit. In the shown example the new block "PLC_PRG" in the programming language "ST" is generated.

Generation of a new programming unit

After that you can open the programming unit "PLC_PRG" in the register "POUs" and write a basic line of code:

hmiCounter:=hmiCounter+1;
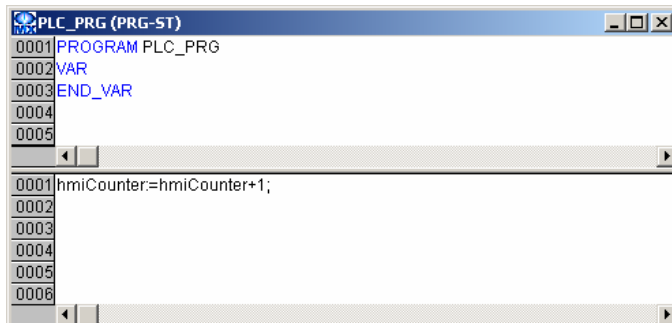
Declaration and statement windows of the programming unit PLC_PRG

After entering *"hmiCounter:=hmiCounter+1;"* and pressing *"Return"* a dialog window for variable declaration appears. Select the variable type *"INT"* and press OK
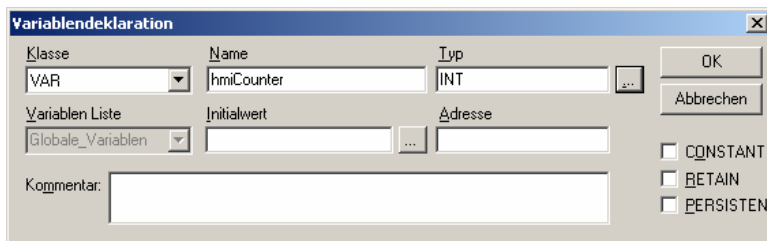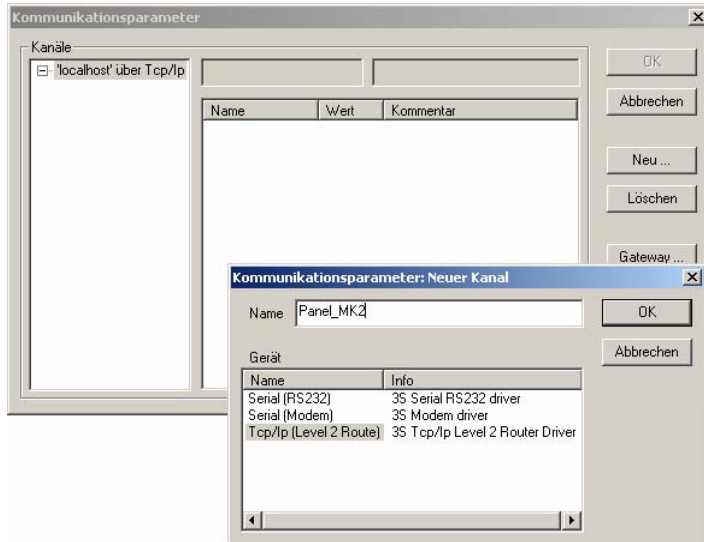

In the declaration field the variable *„hmiCounter"* is displayed.
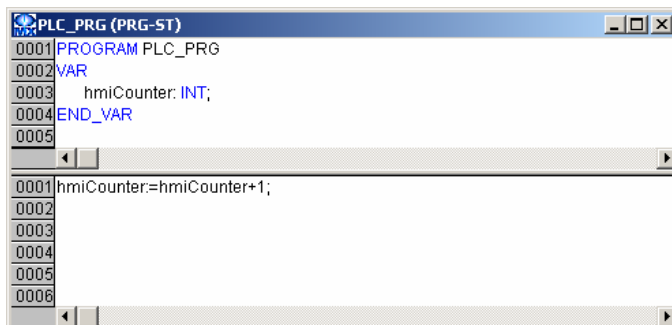
Select in the menu *Project → Rebuild All* to compile the project. If the test program compiles error free then it is ready to be downloaded.

4.4   DOWNLOAD OF THE PROGRAM TO THE UNIT

Select in the menu Online→Communication Settings and generate a new communication channel.

Select „*TCP/IP (Level 2 Route")* from the possibilities and give the communication connection a name e.g. "Panel_XV200" and Acknowledge the dialog with OK.
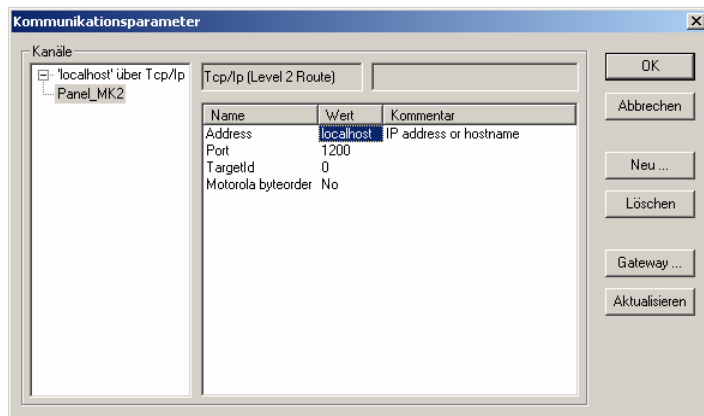
Enter in the field "Address" the IP-address of your unit (e.g. 192.168.0.72). To do this you have to double click on "localhost" and put in the IP-address and press return to end the input.
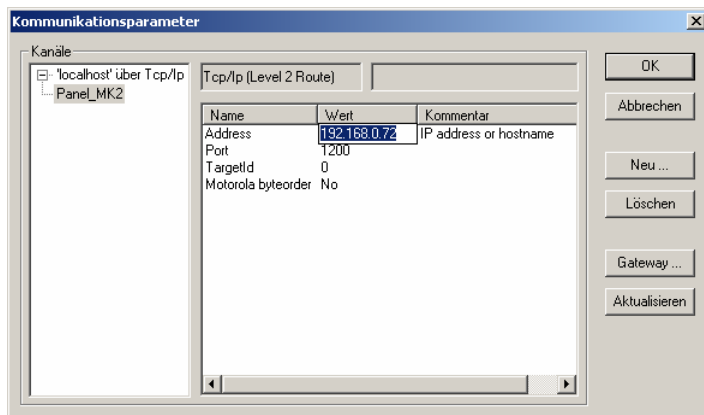
Make sure that in the menu Online->Simulation is deactivated (no checkmark should be visible)!

Afterwards you can download the program over Online→Login. You can start the program with Online→Start.
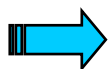
> To have the PLC permanent on the unit you have to generate a boot project. If this is not done then the program is lost when the power is turned off. To save a boot project on the unit make sure you are logged in (Online→Login) and then select Online→Boot Project.

Further topics to the PLC can be found in the helpful documentation to MXpro.

4.5 SYMBOL-FILE CONFIGURATION

The communication between controller and a possible visualization is done over a symbolic address of the variables. To be able to do that a symbol configuration has to be generated. Furthermore the through this process generated symbol file can also be used as a variable import file for the visualization. Through the import of the symbol file in the visualization all generated variables name (symbols) in the PLC are known to the visualization and do not have to be entered again.

The symbol file is used as the basis of communication. The contents of the symbol file are configured in the PLC-development platform. When compiling the symbol file is then generated and when downloading the program to the PLC also the symbol file is downloaded.
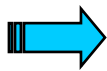
> Out of performance reasons it is suggested that only variables that are needed in the visualization should be exported to the symbol file. Thus the variable field should be structured. This can be applied as example by defining a global variable area where the variables are separated between variables for visualization and variables that are not used in the visualization.

Procedure:

In case you have not saved the PLC project yet, save the project via the menu File→Save as… on you PC.
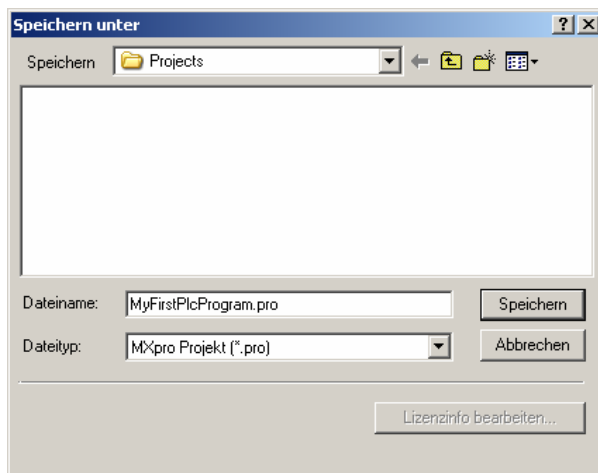

Generation of a new variable list:

- Under the project tree click on the register "Resources"
  - The resource-project tree will open.
- In the resource-project tree open the directory "Resource/Global Variables".
- Click with the right mouse button the entry *„Global Variables"* and select *„Insert Object…"*.
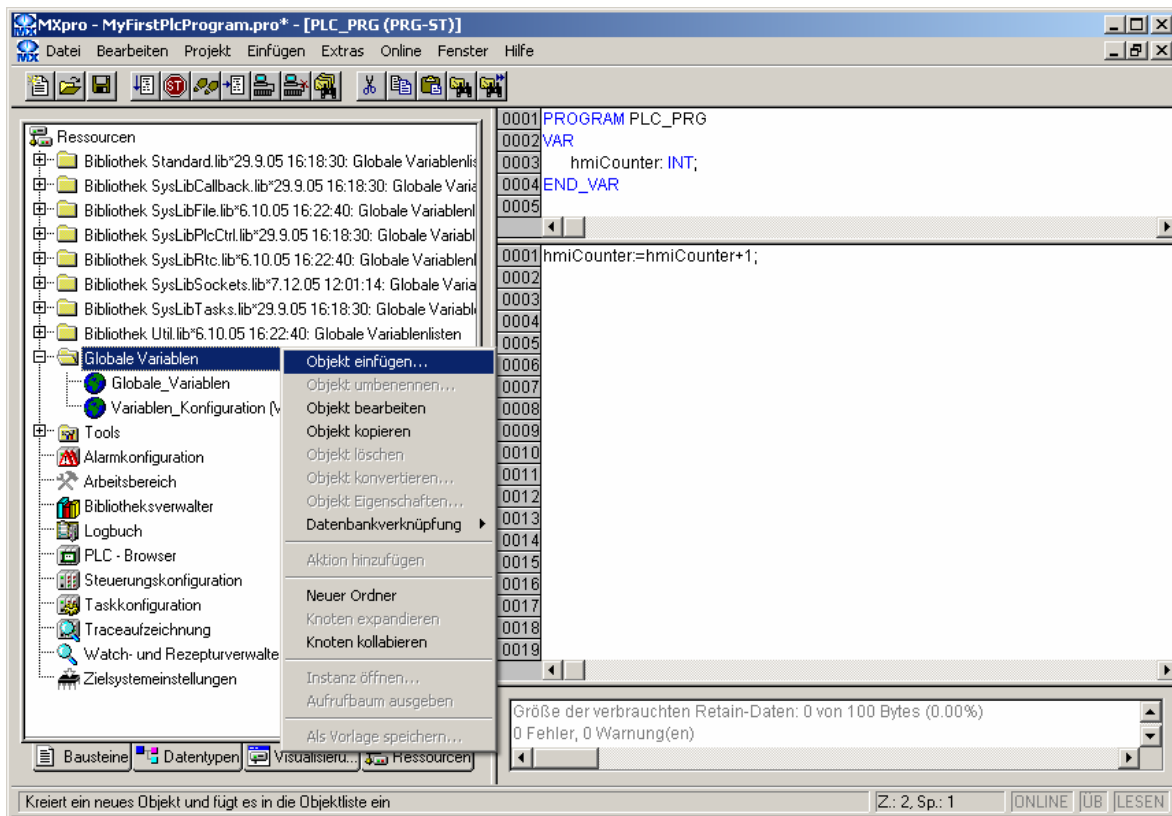
- In the dialog window that appears enter the desired name of the variable list and confirm with pressing *OK*.
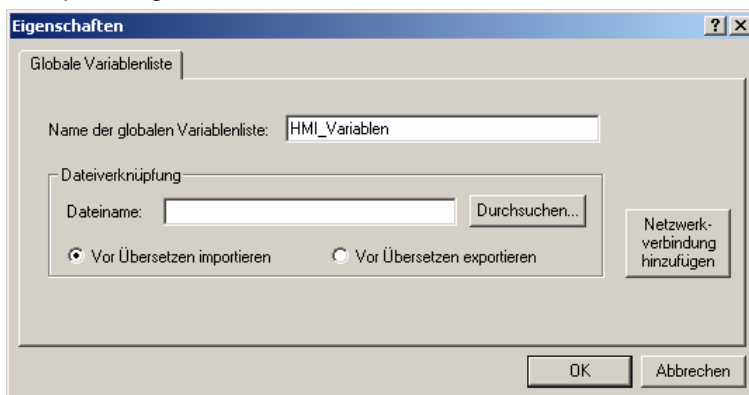

Set up the symbol configuration for the symbol file:

- Ensure that the function *"Simulation"* in the menu *"Online"* is not active (no checkmark is to be seen)
- Click in the menu *Project→Options…* and select the category *"Symbol Configuration"* and activate the point *"Generate Symbol File"*
    - With the function *"Generate Symbol File"* a symbol file will be generated every time the project is compiled.
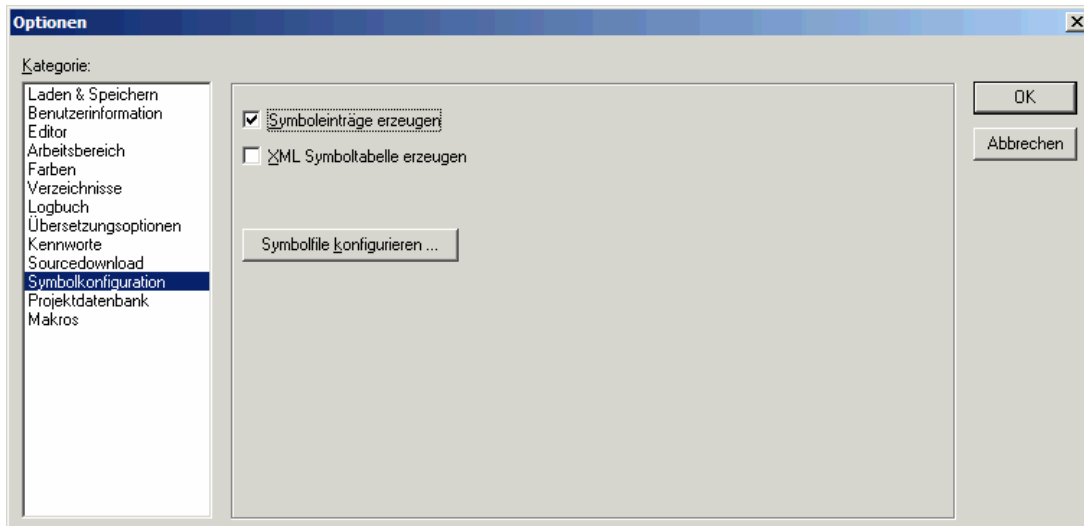
- Define from which objects the variables should be taken to export into the symbol file:
  - Click on the button *„Generate Symbol File…"*.
  - In general all objects are selected. That is why you should deactivate for all objects the option *„Export variables of this object"*.
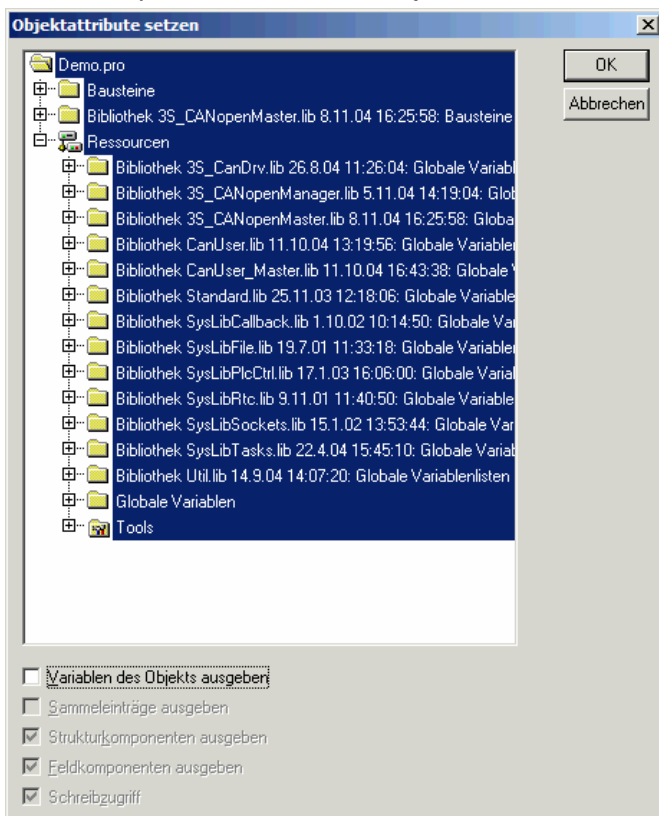
- In the object tree open the subdirectory *„Resource\Global Variables"*.
- Select the variable list that you would like to export.
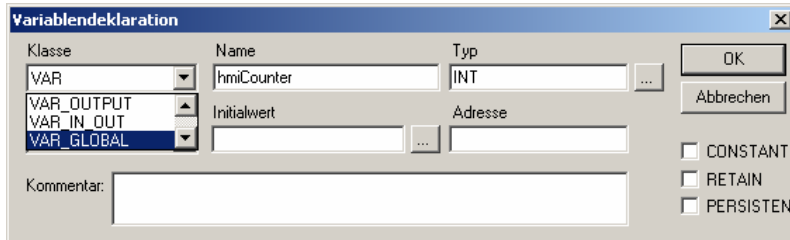- Activate the option *„Export variables of this object"* and confirm with *OK*.
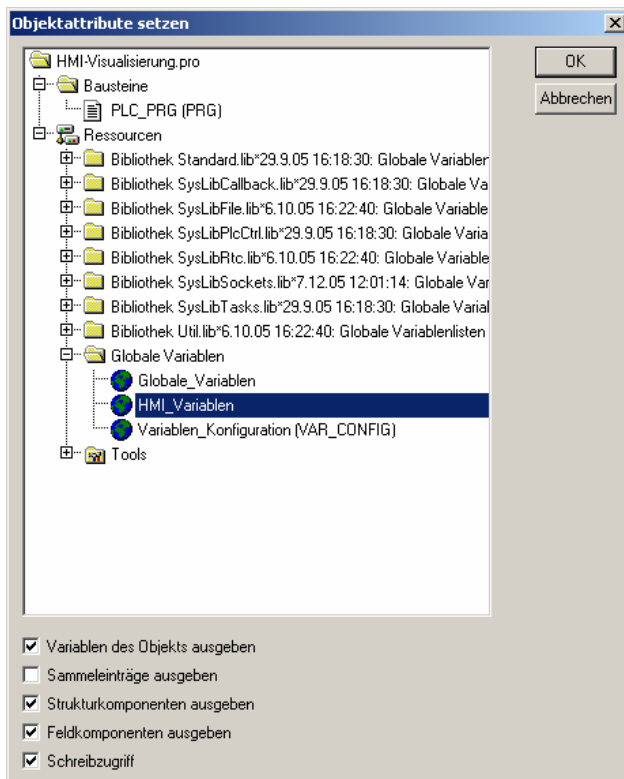
- Confirm the project options with *OK*.

Allocate the needed variables for the visualization to the global variables specified for visualization:
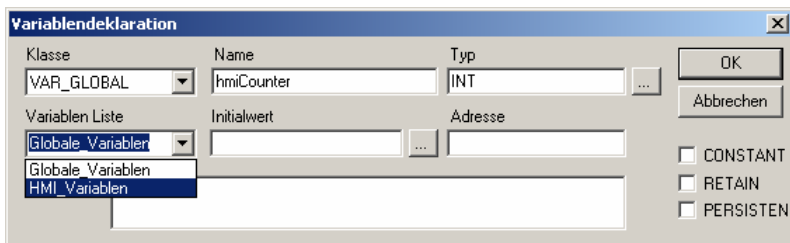
- In the POU-project tree double click on the programming unit in which are the variables that you would like to allocate to the variable list.
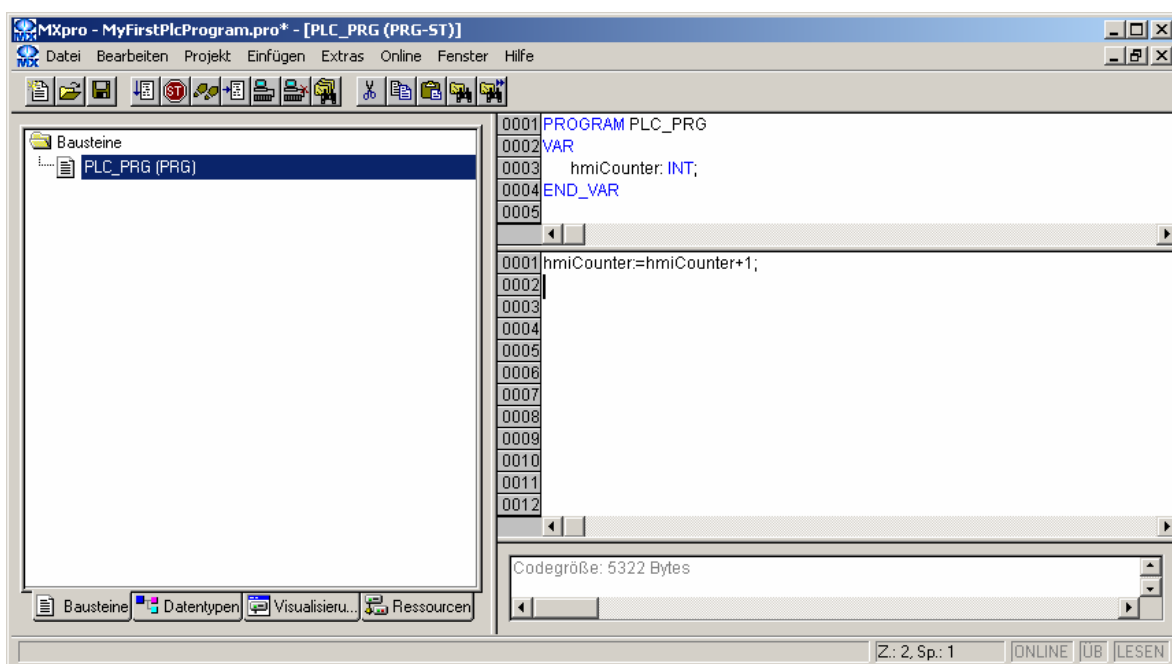
- Put the cursor in the variable that you would like to allocate.
- Click in the menu Edit→Auto declare…
  - The window "Declare Variable" will open.
- Select the class„*Class*" „*VAR_GLOBAL*".

- Select under "Variable List" the variables list you would like to allocate to.

- Confirm the adjustments with *OK*.

Compile and download the PLC project to the unit:

- Click in the menu Project→Rebuild All to compile the project.
- Click in the menu Online→Login to log into the unit.
- Click in the menu Online→Start to start the PLC project on the unit.
- Click in the menu Online → Create Boot project to save the project on the unit.
- Click in the menu Online→Logout to log off of the unit.
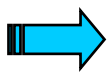
> The performance of visualization (Refresh cycle) can be increased by grouping the individual SPS variables in data structures „Struct" or data fields „array". The data structures and data fields are transferred in a communication package between the MXpro runtime system and Galileo runtime system, individual variables are sent in individual packages behind each other.

Further topics to PLC you may find in the helpful MXpro documentation.

5   THE FIRST GALILEO PROJECT

It consists of a simple application which should show the projecting of the connection of the HMI to the PLC of the MICRO PANEL XV200.

Requirements:
The GALILEO visualization software must be installed correctly.
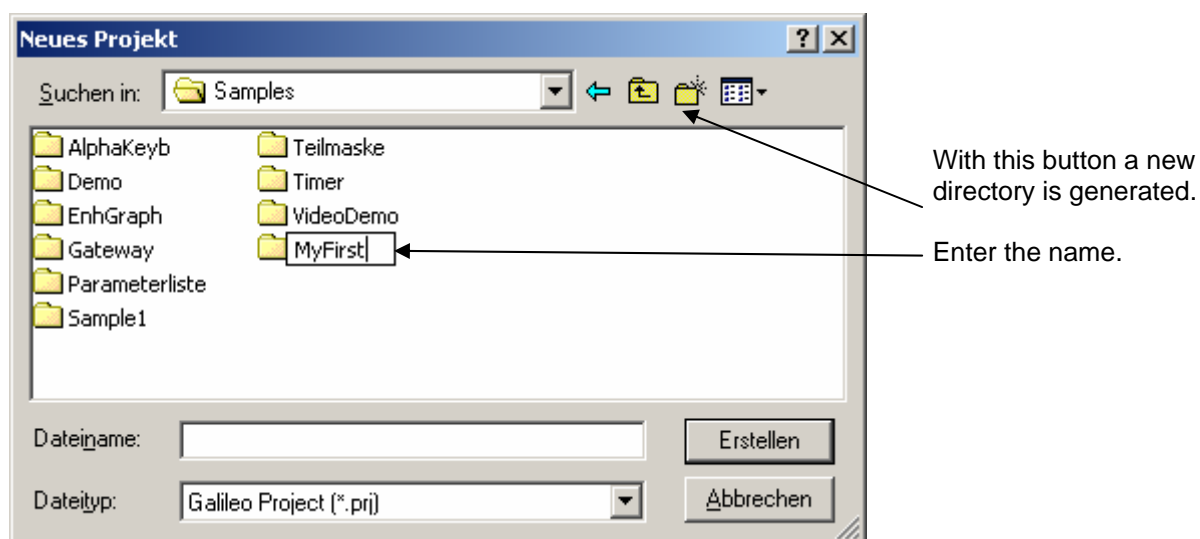
5.1   GENERATE NEW PROJECT

Start the GALILEO software. The first step is to generate a new HMI project.

Menu *Project → New*.

In the now appearing window "New Project" you should first create a new project directory.

Example : MyFirst

This is used to generate a hierarchical overview when have more than one project.

With this button a new directory is generated.

Enter the name.

Hereupon the folder must be opened. Following this you should enter in the input field the desired file name.

Example : MyFirst

5.2 SELECT UNIT

The window "Unit Type" is opened automatically when a new project is generated. It can also be opened over the menu Configuration→Unit Type… and at a later time edited.

Select the unit type:
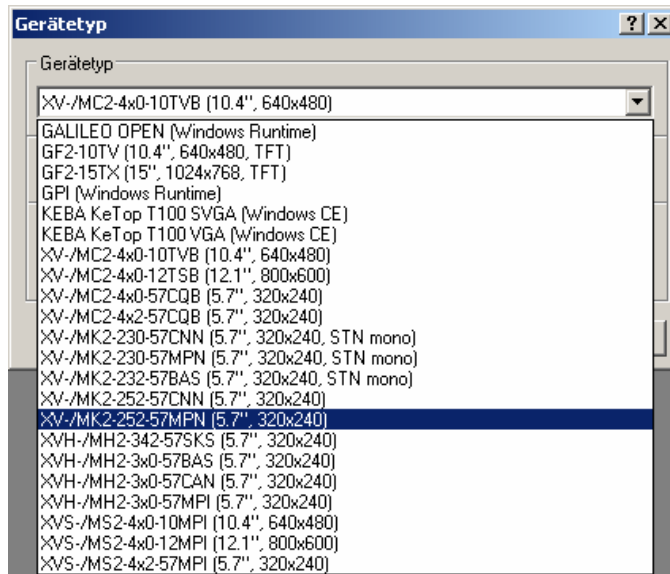
For the selection field "Format" the option landscape is chosen whereby the unit will be used in horizontal operation.

You can work with 256 colours (grey levels). 5 colours of that are displayed.

5.3 SELECT PLC

The window "Select PLC" will also be opened automatically when a new project is generated. It can be opened over the menu Configuration→Select PLC… and edited later.

Depending on the unit type CAN, MPI or RS232 different communication types are available. Select under "Add" the communication to the PLC.
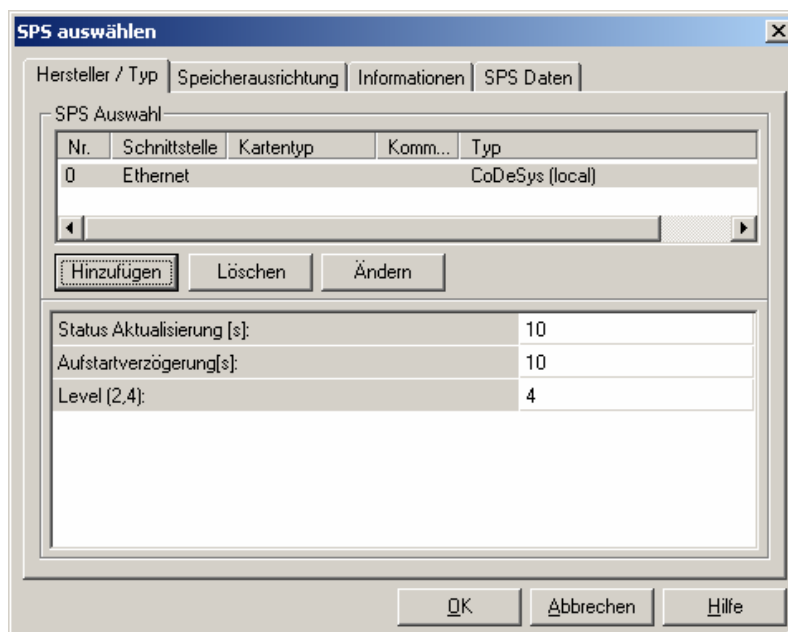
The following example uses the integrated PLC as controller type. Also more than one controller can be selected. So that one PLC can be connected over MPI (Onboard) and another one to the internal PLC over CoDeSys (local).

To keep in mind is the different types of addressing the variables.

Selection of the integrated PLC: CoDeSys (local)
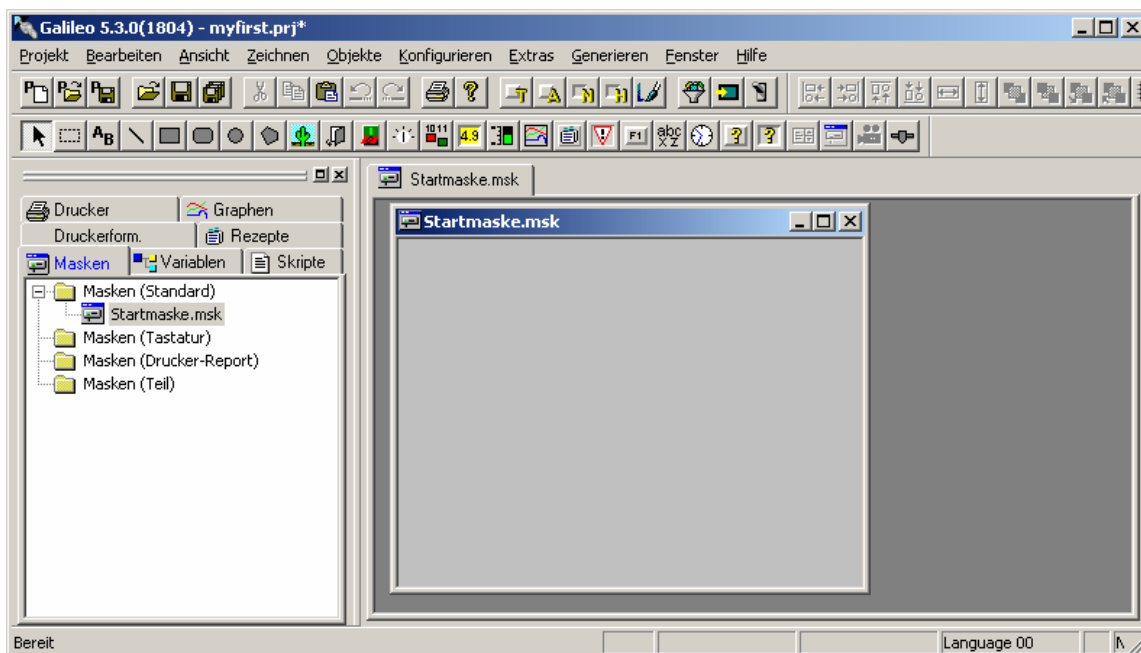With OK the new project is configured.

5.4 GENERATE MASK

The first step is to generate an empty mask (picture).

Index mask (Standard) → select right mouse button *„NEW"*:
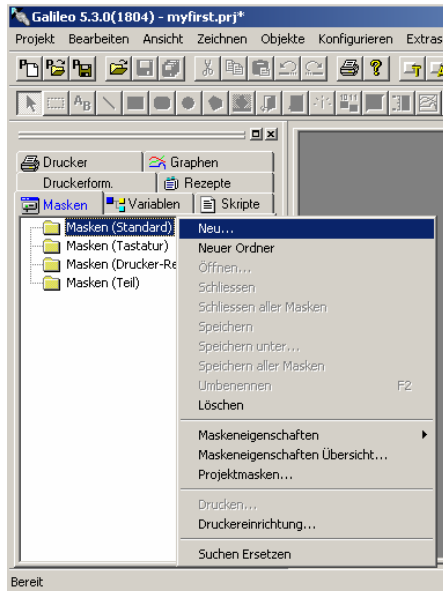
Give the mask a name e.g.: „Startmask"

The mask can be given specific properties like screen saver, colour, type, etc. These can be configured under the sub menu "Mask Properties"
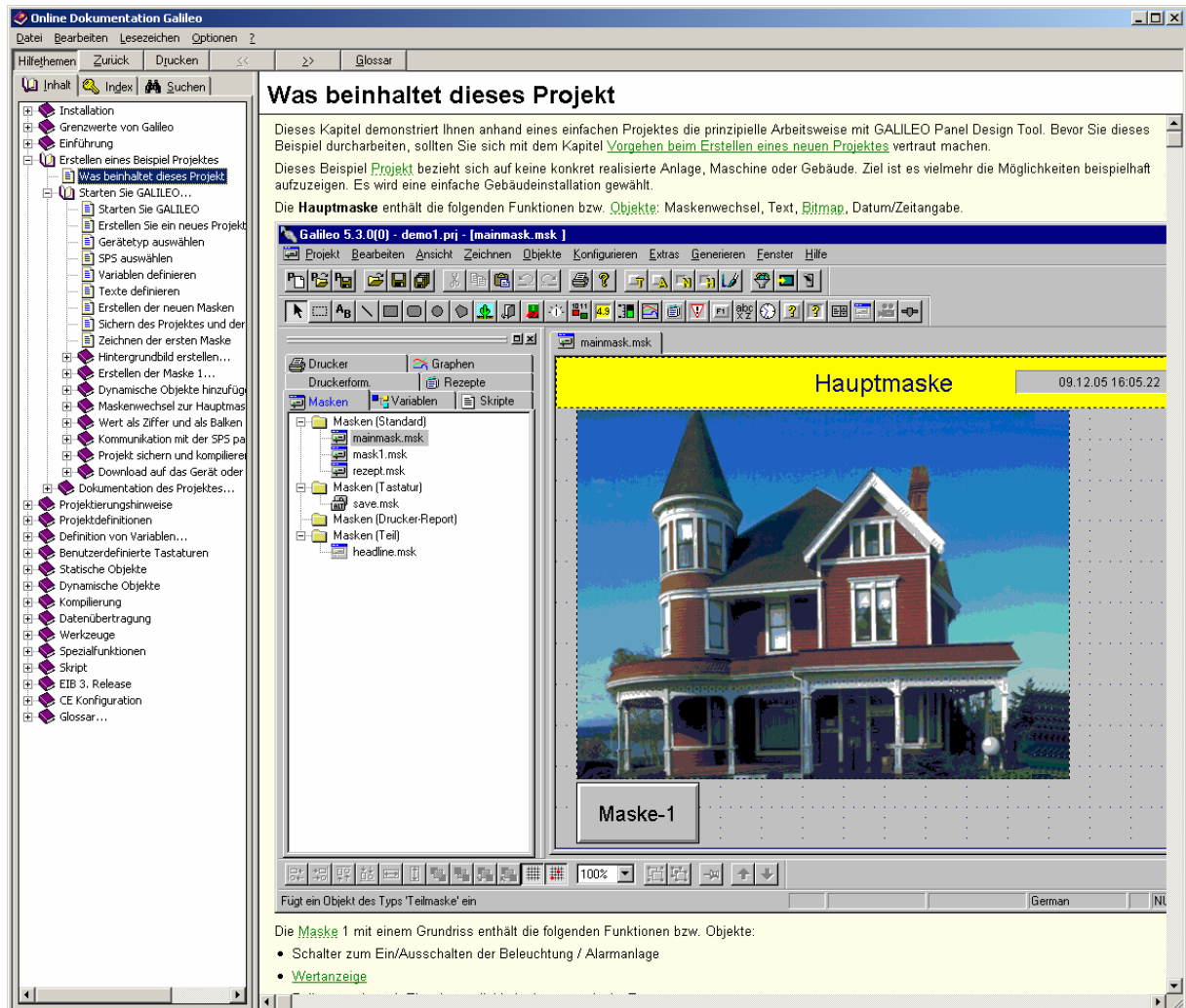

Following this you can insert objects into the mask using the object list.
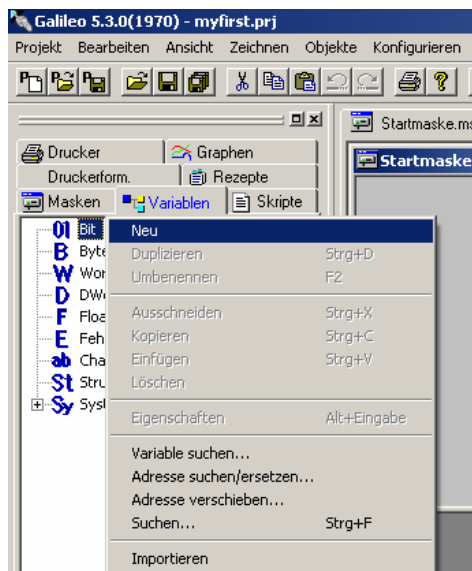

Object list

GALILEO help system with detailed examples and instructions to every object.

5.5   GENERATE VARIABLE STRUCTURE

In our small example we are displaying a numeral value of the PLC. For this we must first generate the used variables. This is acompished over the register variables.

If the intergrated PLC is used and the symbol file of the PLC was compiled right the the variables names can be imported.

Change to the register „Variables"; move the mouse cursor to any variable type e.g. "bit" and press the right mouse button. A dialog will open where you have to select "Import".

Select the symbol file of the PLC program as the import file. You can find the symbol file in the same directory where the PLC program is saved on the PC. Confirm the dialog with pressing the "Start" button. Also see chapter „*4.5* Symbol-File Configuration*".*
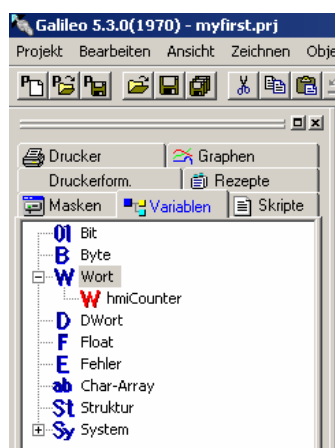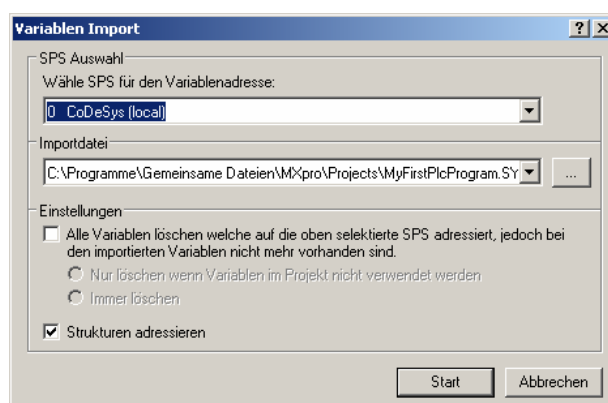

Through the import of the PLC variable „*hmiCounter"* from Type *WORD* the variable is inserted into the variable list. The red marking of the variable shows that a addressing to the PLC has already occured

To use variables from another controller type or to use variables without using the import function you have to use the following procedure:
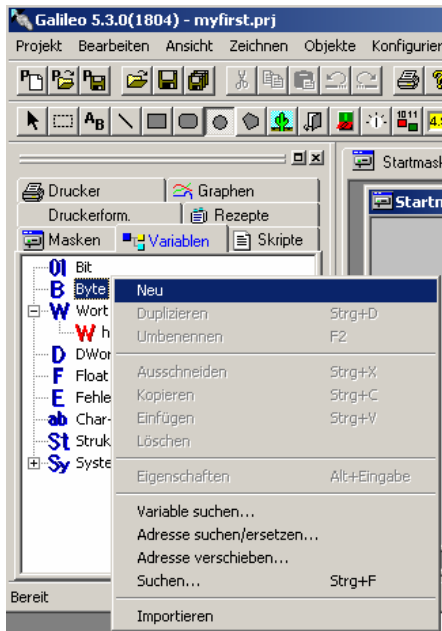

E.g. a byte variable:
Position the mouse cursor on the variable type "Byte" and press the right mouse button and select "New". Then enter the variable name. Thus the variable is generated but marked blue. The colour blue means that the variable has no address and thus has no possible communication to as PLC. This is how you generate a local visualization variable. With a double click on the variable a property window to the variable will open.
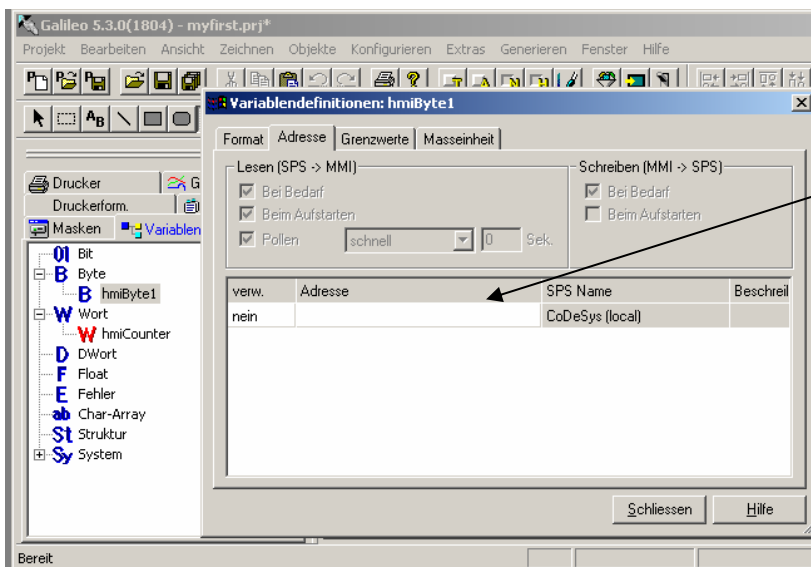
In the property dialog under the register "Address" you can click on the empty field and enter the address of the PLC. This address depends on the type of PLC selected. If you are communicating to the internal PLC you must also enter the name of the symbol file. (This only applies to global PLC variables!)
Through a double click automatically the same name will be taken as the PLC variable name as the one entered in GALILEO.
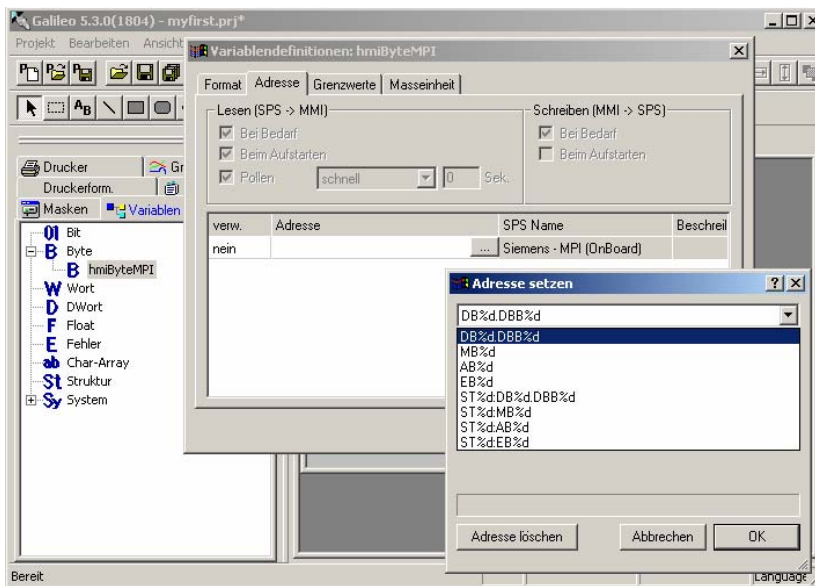
When communicating to another controller the address has to be entered specific to the protocol. In the dialog "Set Address" you can see and select the possible nomenclature needed. According to the desired nomenclature the following input fields for addressing the variables are possible.
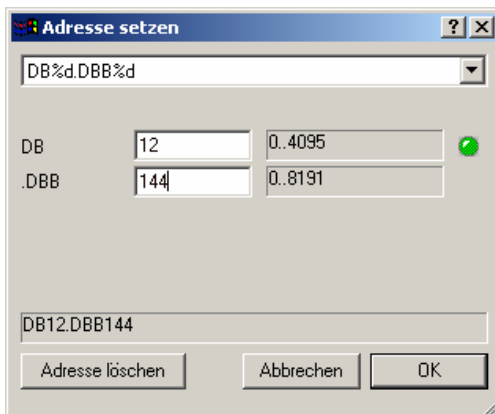
The displayed example shows the address of a variable for a S7 controller over MPI. The nomenclature of a variable is selected out of the data block of the controller. The address is herewith select as DB12 byte 144.
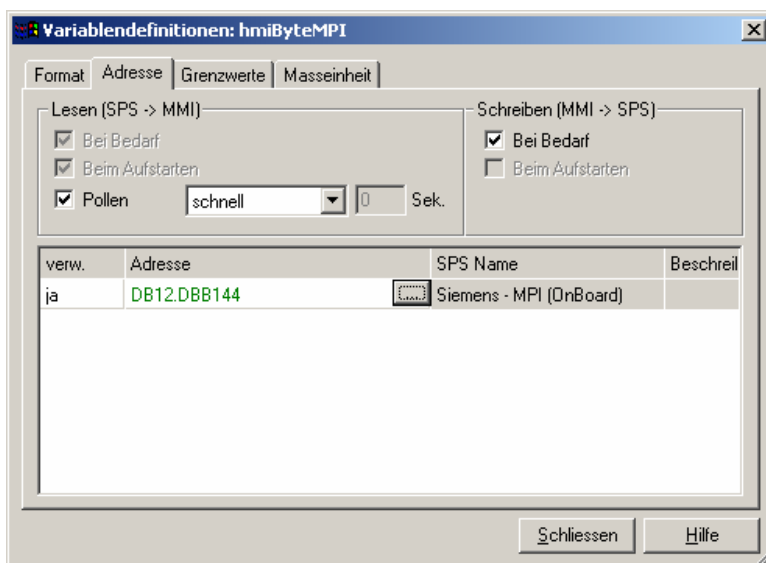
After following the address the variable in the variables list is marked red (=addressed).

5.6 GENERATE DISPLAY OBJECT

To not get any error message in the example delete the addressed variables which are not address in the PLC project. You can do this by marking the variable and pressing "delete"

Insert an object of the type "Value Entry/Display" in the start mask:

To do this you have to click in the object list on **4.9** and then draw via mouse and pressed mouse button the object in the desired size and position on the start mask.
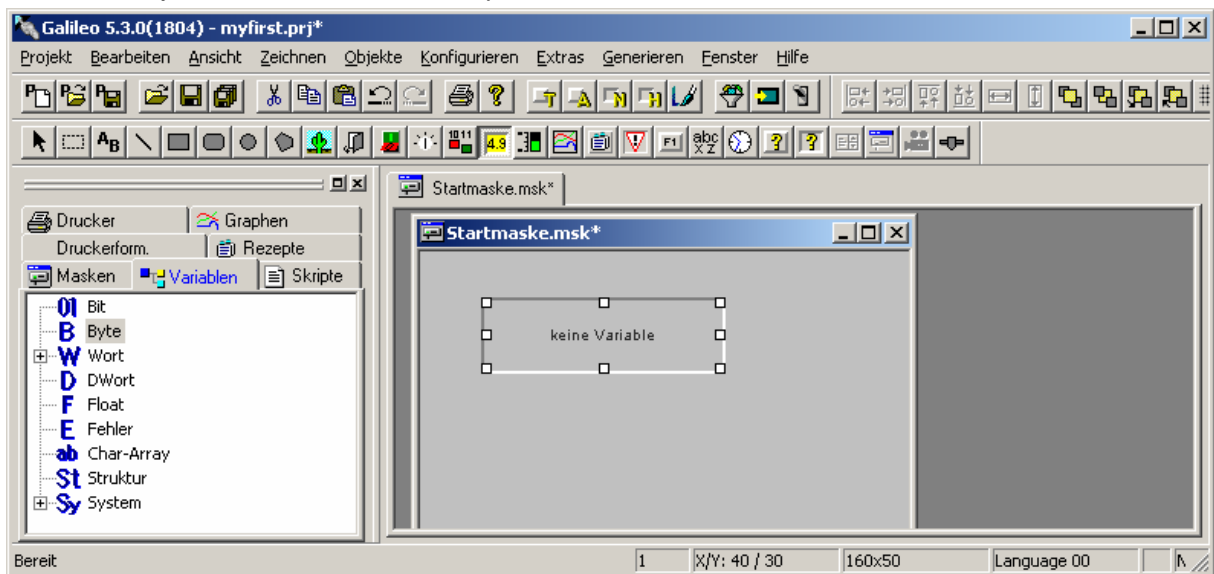
Through a double click on the new generated object field the property window appears. Select from the variable list the desired variable and confirm the dialog with OK.
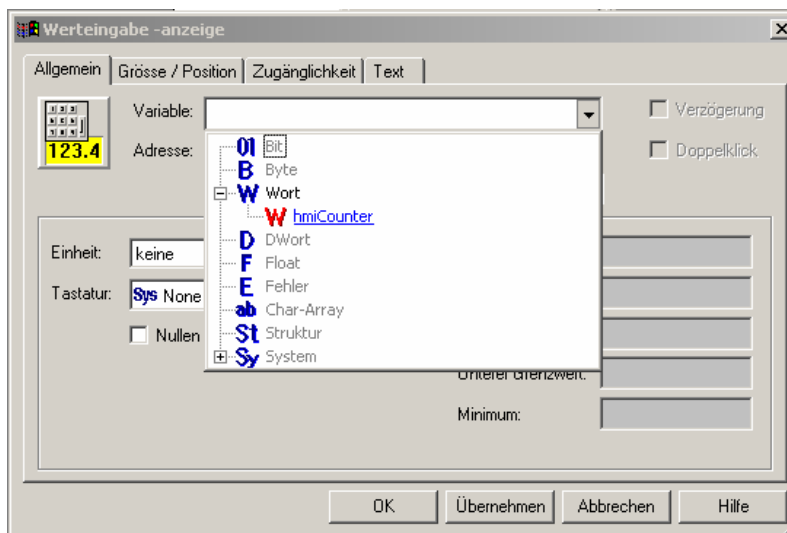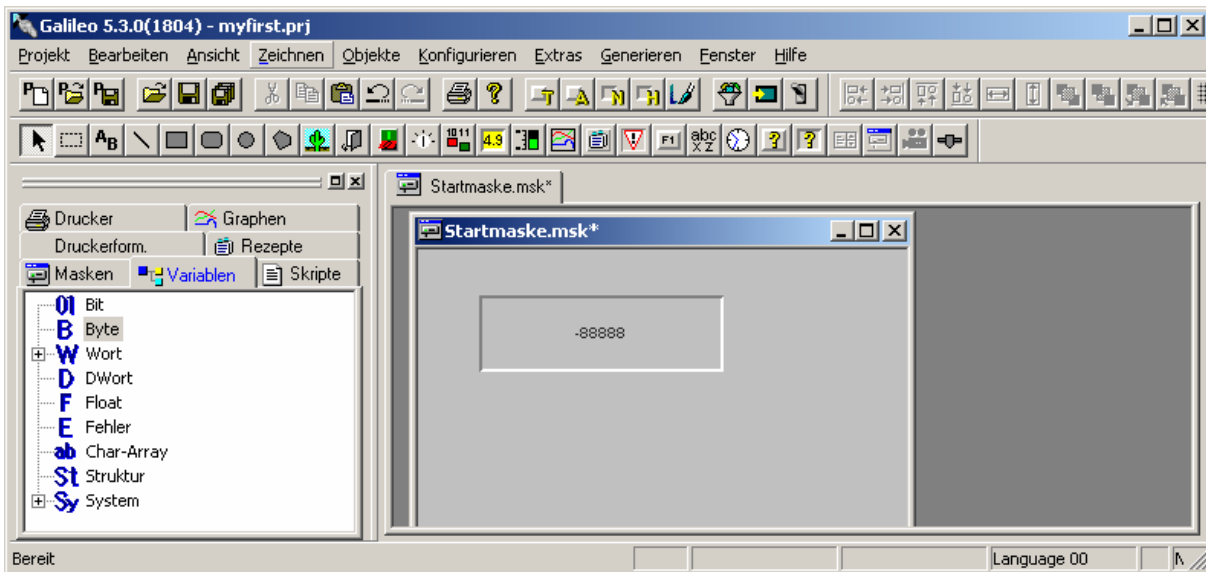
Value entry/Display object with linked variable. (-88888)

We have finished our small project and now want to go to the next step of the project; compiling and downloading to the unit.

5.7 COMPILE PROJECT

Via the menu Build→Compile or over the button the project will be compiled. The compiling procedure is protocolled in a display window. Eventual errors will be displayed red. Through scrolling the detailed error message can then be read.
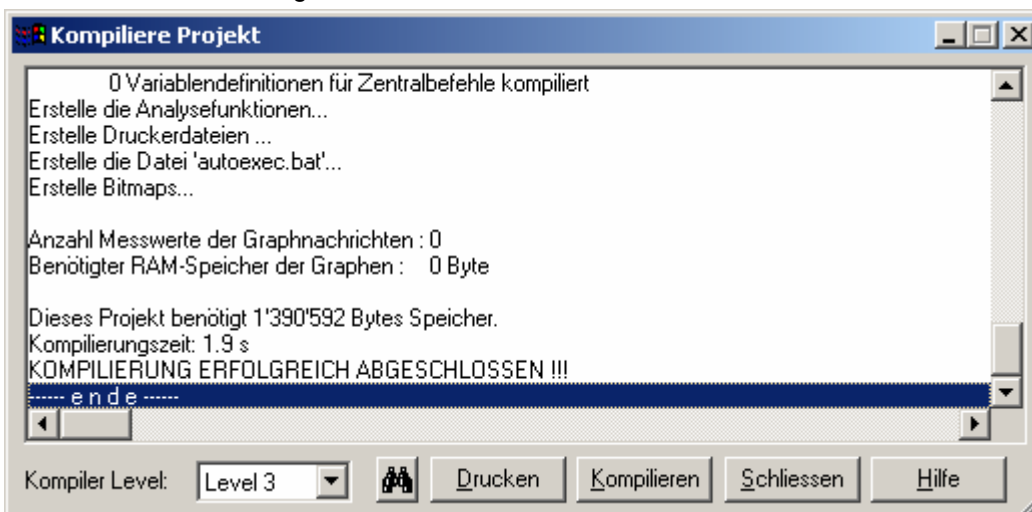
5.8 SIMULATE PROJECT ON THE PC

Via menu Build→Start Project Inspector or over the button you can start the simulation of the project on your PC.
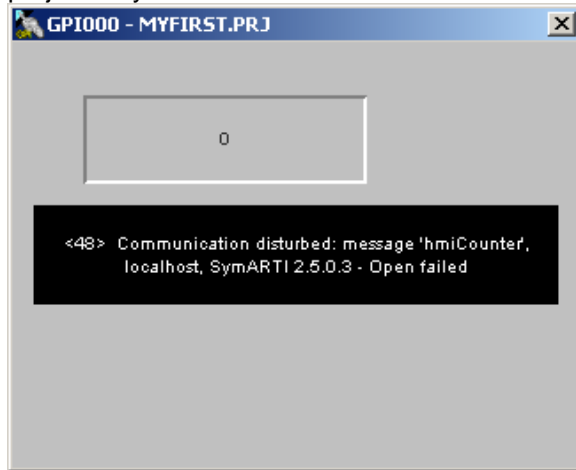
PC Simulation of the project (*Project Inspector*)

5.9 DOWNLOAD PROJECT TO THE UNIT

Now the generated project should be downloaded and on started on the unit.
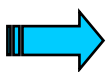
5.9.1 OPEN FTP-CONNECTION TO THE UNIT

To get a connection between the PC and the unit you must start the FTP server on the panel.

To start the FTP server you must select on the panel Start→Programs→Communication→FTPServer
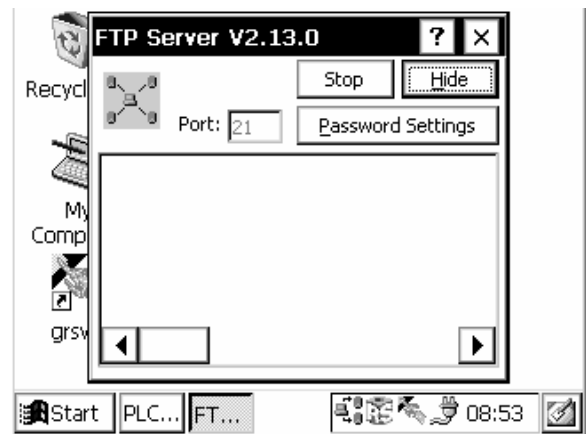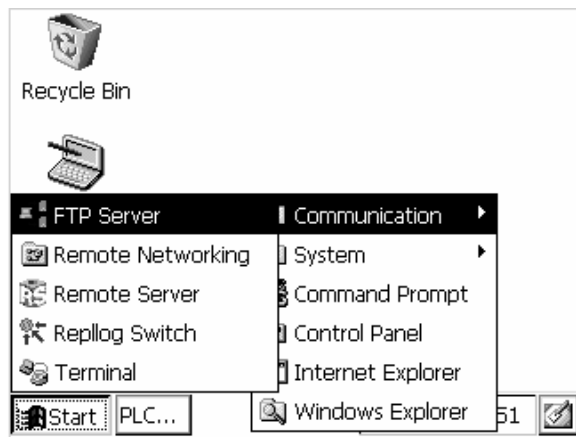
The FTP serve is now started and ready!

The FTP server can also be started automatically when the panel is booted. To change the Window CE start up behaviour please look in the GALILEO help "Micro Panels with Windows CE"

→ Further information: Network in Short ([3] See chapter 1.1)
→ Further information: MICRO PANEL with Windows CE ([4] See chapter 1.1)

5.9.2 SETUP FTP PATH IN GALILEO

To be able to download the project to the destination the destination parameters for the project transfer to the unit must be generated. Change to the download dialog via the menu Build→Download(local,FTP,…) or over the button .
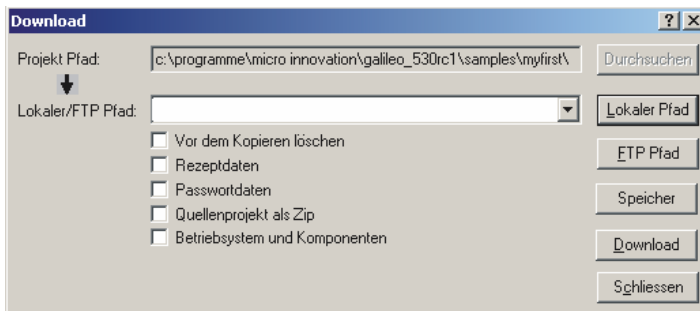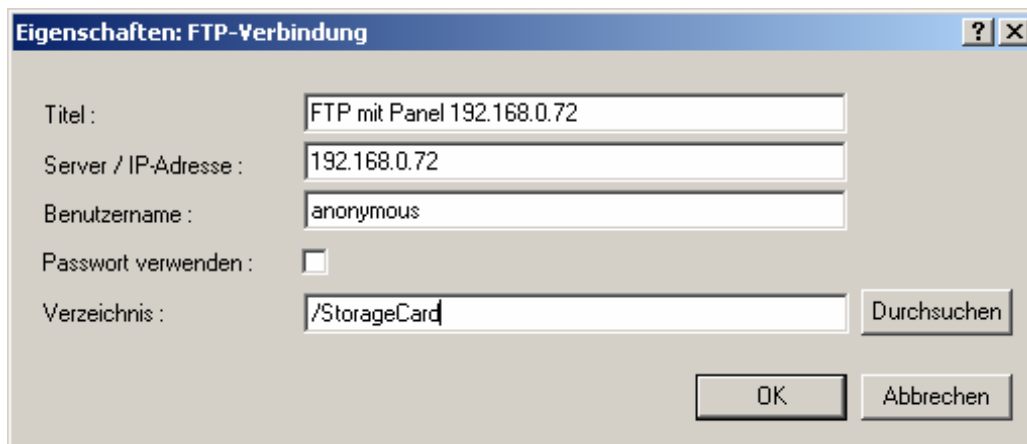
In the window "Download" click on the button "FTP path". The window "FTP Connections" will appear.
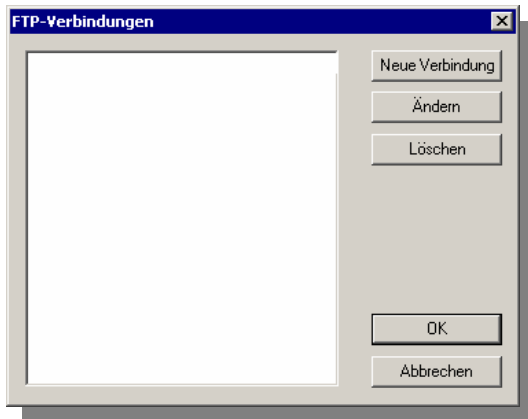
Click on "New Connection". The window "Properties : FTP-Connection" will appear.

Enter a title, the IP-address of the unit and the directory for the download to the panel. With a click on "Browse" you should already find the directory path of the Storage Card of the panel. But for this an active connection and the IP-address of the panel must exist.

Click on "OK" to save the new parameters.

The connection with its title should now be selectable. Click on the desired connection and confirm with "Close".
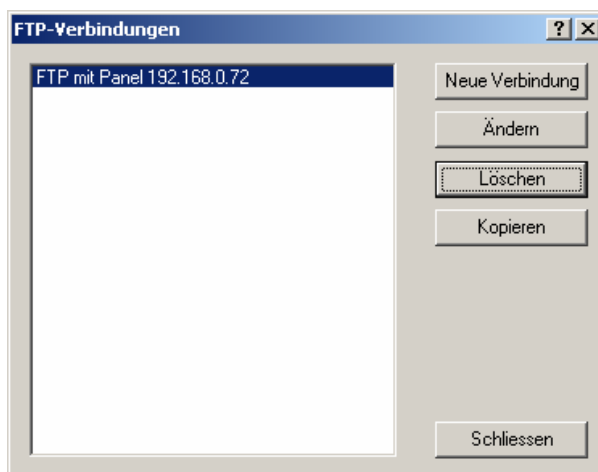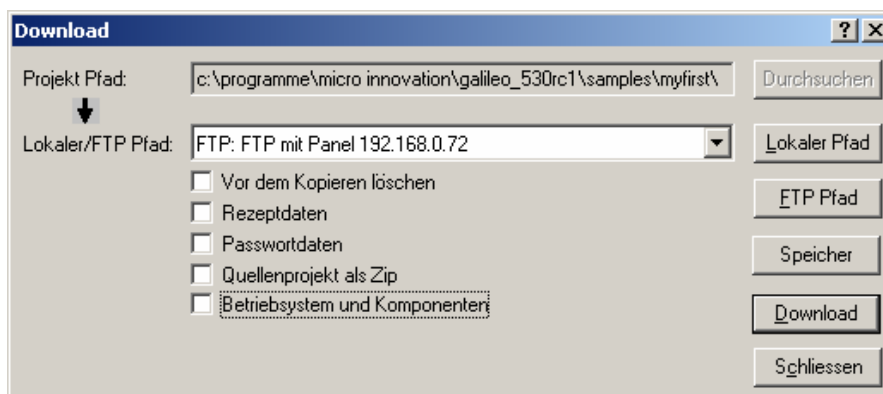

The selected FTP path can now be seen in the field "Local/FTP path"
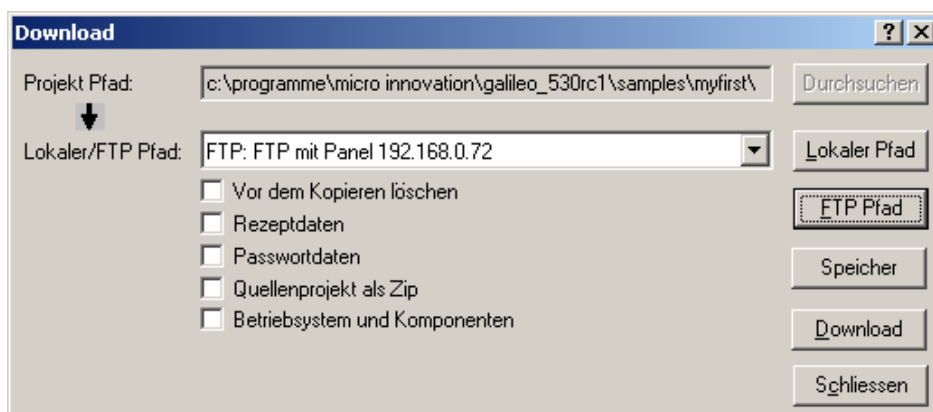
5.9.3 DOWNLOAD OF A PROJECT

After the visualization project has been generated and compiled and the target settings have been completed you can now start the project download to the panel. For this select the menu Build→Download(local,FTP,…) or press the button [icon] .

The download dialog appears.

Start the project download over the button "Download". During the project transfer you can see the progress. Eventual you will be asked if you want to also download updates of the operating system or visualization runtime (GRS) over dialogs.
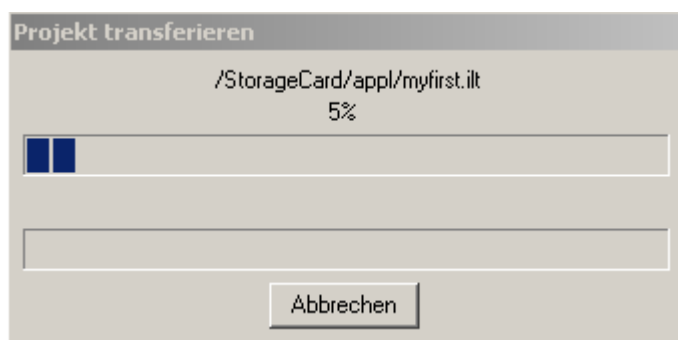
If the project transfer is completed the following dialog will be displayed. Select now "Start GRS" (GRS = GALILEO Runtime System) to start the visualization project on the unit.
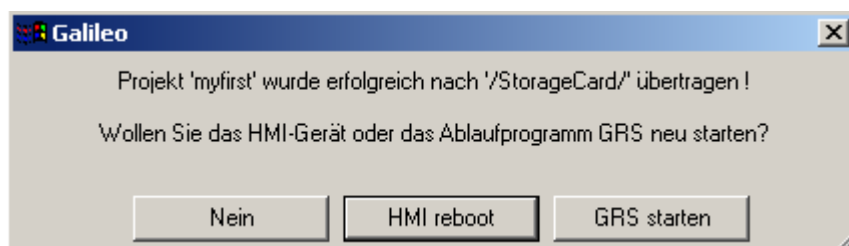
While the GRS starts status information will be displayed. Following that your designed mask will be displayed.
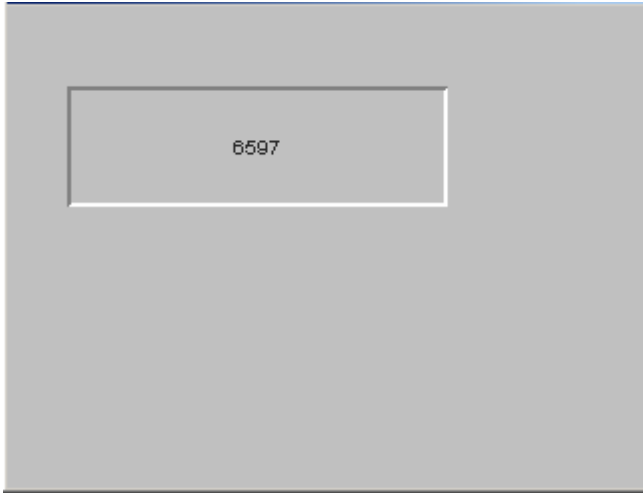
Display of the start mask from the project MyFirst.

When the PLC program is started on the panel the value must be constantly changing.

If there is no connection to the PLC then a cyclic error message will be displayed with the information which variables are without communication.
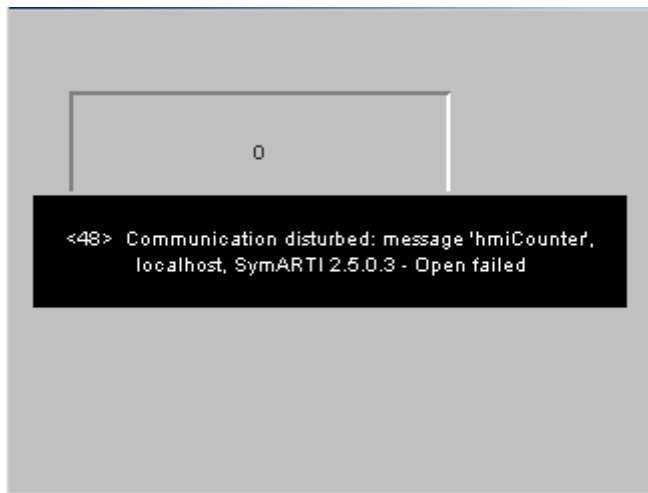
We wish you lots of success and fun with your XV200!

Micro Innovation AG
Spinnereistr 8-14
CH-9008 St. Gallen
Switzerland

Tel	**:**	**++41- 71 243 24 24**
Fax	**:**	**++41- 71 243 24 90**
email	**:**	**info@microinnovation.com**
homepage	**:**	**http://www.microinnovation.com**

Subject to technical changes